

CLAIMS

What is claimed is:

1. An apparatus for use in instructing a user to communicate in Braille, comprising:
  - 5 (a) a frame;
  - (b) a plurality of tactile switching devices mounted at the frame, each tactile switching device depressible by the user between a raised position for emulating a raised Braille dot and a lowered position; and
  - 10 (c) electronic circuitry supported by the frame and comprising an audio output device, the circuitry communicating with the switching devices for producing an auditory output for emission by the audio output device in response to a combination of switching devices selectively activated by a user, wherein the
  - 15 auditory output corresponds to the Braille character represented by the combination of activated switching devices.
2. The apparatus according to claim 1 comprising a pair of arms coupled to the frame, each arm supporting three of the tactile switching devices, wherein at least a portion of each switching device is raised above an
- 20 upper surface of a corresponding arm when at the raised position.
3. The apparatus according to claim 2 wherein the pair of arms are pivotably coupled to the frame and rotatable along the frame between a

first position at which the arms are generally parallel to each other and the switching devices are arranged in a 3 X 2 array of Braille dots for emulating a Braille cell, and a second position at which the arms are pivoted outwardly from each other and the switching devices are arranged in a 1 X 6 row of Braille dots for emulating a Braille writer.

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4. The apparatus according to claim 2 wherein each arm comprises a pivot member extending into a corresponding bore in the frame, and each arm is pivotable about an axis of its respective pivot member.

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5. The apparatus according to claim 1 wherein the circuitry comprises:
  - (a) a control device for receiving a user input produced by the combination of switching devices selectively activated by the user, and for sending a control signal based on the user input received; and
  - (b) a playback device for storing a plurality of different auditory outputs, receiving a control signal sent from the control device, and sending a selected auditory output to the audio output device based on the control signal received from the control device.

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6. The apparatus according to claim 5 wherein the control device comprises a microcontroller.

7. The apparatus according to claim 5 comprising an audio output selector switch communicating with the control device for selecting a type of auditory output to be sent from the playback device from a plurality of different types of auditory outputs stored in the playback device.
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8. The apparatus according to claim 7 wherein, for each user input, the plurality of different types of auditory outputs are selected from the group consisting of a pronunciation of a character corresponding to the user input, a pronunciation of a word beginning with a character  
10 corresponding to the user input, a sound associated with a word beginning with a character corresponding to the user input, and combinations thereof.
9. The apparatus according to claim 5 comprising a time delay switch  
15 communicating with the control device for selecting a value for a time delay between receiving the user input by the control device and sending the selected auditory output by the playback device.
10. The apparatus according to claim 5 comprising a record/playback switch  
20 communicating with the control device for selectively switching the electronic circuitry between a playback mode enabling the electronic circuitry to produce the auditory output in response to activation of the switching devices by the user, and a record mode enabling auditory outputs to be received by the playback device and stored thereby.

11. The apparatus according to claim 10 comprising an audio input connection communicating with the playback device for communicating with an audio input device.  
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12. The apparatus according to claim 11 wherein the audio input connection comprises an audio jack mounted to the frame.
13. The apparatus according to claim 11 comprising a record button  
10 communicating with the control device for selectively enabling the playback device to record an auditory input received from audio input connection.
14. The apparatus according to claim 5 wherein the playback device  
15 comprises a voice chip.
15. The apparatus according to claim 1 comprising an audio output selector switch communicating with the circuitry for selecting a type of auditory output to be produced by the circuitry from a plurality of different types  
20 of auditory outputs stored by the circuitry.
16. The apparatus according to claim 1 comprising a time delay switch communicating with the circuitry for selecting a value for a time delay between receiving a user input by the circuitry resulting from activation

of the switching devices, and emitting the audio output by the audio output device.

17. The apparatus according to claim 1 comprising a record/playback switch  
5 communicating with the circuitry for selectively switching the circuitry between a playback mode enabling the circuitry to produce the auditory output in response to activation of the switching devices by the user, and a record mode enabling the circuitry to receive and store audio outputs.
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18. An apparatus for use in instructing a user to communicate in Braille, comprising:
- (a) a frame;
  - (b) a plurality of switching devices for selective activation by a user  
15 to represent one or more raised Braille dots;
  - (c) a pair of arms pivotably coupled to the frame, each arm supporting at least three switching devices, wherein the pair of arms are rotatable along the frame between a first position at which the arms are generally in parallel relation and the switching  
20 devices are arranged in a 3 X 2 array of Braille dots for emulating a Braille cell, and a second position at which the arms are pivoted outwardly from each other in a 1 X 6 row of Braille dots for emulating a Braille writer; and

- 5 (d) electronic circuitry supported by the frame and comprising an audio output device, the circuitry communicating with the switching devices for producing an auditory output for emission by the audio output device in response to a combination of switching devices selectively activated by a user, wherein the auditory output corresponds to the Braille character represented by the combination of activated switching devices.
- 10 19. The apparatus according to claim 18 wherein the circuitry comprises:
- 10 (a) a control device for receiving a user input produced by the combination of switching devices selectively activated by the user, and for sending a control signal based on the user input received; and
- 15 (b) a playback device for storing a plurality of different auditory outputs, receiving a control signal sent from the control device, and sending a selected auditory output to the audio output device based on the control signal received from the control device.
- 20 20. The apparatus according to claim 19 comprising an audio output selector switch communicating with the control device for selecting a type of auditory output to be sent from the playback device from a plurality of different types of auditory outputs stored in the playback device.

21. The apparatus according to claim 19 comprising a time delay switch communicating with the control device for selecting a value for a time delay between receiving the user input by the control device and sending the selected auditory output by the playback device.
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22. The apparatus according to claim 19 comprising a record/playback switch communicating with the control device for selectively switching the electronic circuitry between a playback mode enabling the electronic circuitry to produce the auditory output in response to activation of the switching devices by the user, and a record mode enabling auditory outputs to be received by the playback device and stored thereby.
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23. The apparatus according to claim 22 comprising an audio input connection communicating with the playback device for communicating with an audio input device.
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24. The apparatus according to claim 23 comprising a record button communicating with the control device for selectively enabling the playback device to record an auditory input received from audio input connection.
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25. The apparatus according to claim 18 comprising an audio output selector switch communicating with the circuitry for selecting a type of

auditory output to be produced by the circuitry from a plurality of different types of auditory outputs stored by the circuitry.

26. The apparatus according to claim 18 comprising a time delay switch  
5 communicating with the circuitry for selecting a value for a time delay between receiving a user input by the circuitry resulting from activation of the switching devices, and emitting the audio output by the audio output device.
- 10 27. The apparatus according to claim 18 comprising a record/playback switch communicating with the circuitry for selectively switching the circuitry between a playback mode enabling the circuitry to produce the auditory output in response to activation of the switching devices by the user, and a record mode enabling the circuitry to receive and store  
15 audio outputs.
28. An apparatus for use in instructing a user to communicate in Braille, comprising:
- (a) a frame;
- 20 (b) a plurality of tactile switching devices, each tactile switching device depressible between a lowered position and a raised position;
- (c) a pair of arms pivotably coupled to the frame, each arm supporting at least three tactile switching devices wherein, for the



5 raised position of each switching device, at least a portion of the switching device is raised above an upper surface of its corresponding arm for emulating a raised Braille dot, and the pair of arms are rotatable along the frame between a first position at which the arms are generally in parallel relation and the switching devices are arranged in a 3 X 2 array of Braille dots for emulating a Braille cell, and a second position at which the arms are pivoted outwardly from each other in a 1 X 6 row of Braille dots for emulating a Braille writer; and

10 (d) electronic circuitry supported by the frame and comprising an audio output device, the circuitry communicating with the switching devices for producing an auditory output for emission by the audio output device in response to a combination of switching devices selectively activated by a user, wherein the  
15 auditory output corresponds to the Braille character represented by the combination of activated switching devices.

29. The apparatus according to claim 28 wherein the circuitry comprises:

20 (a) a control device for receiving a user input produced by the combination of switching devices selectively activated by the user, and for sending a control signal based on the user input received; and

(b) a playback device for storing a plurality of different auditory outputs, receiving a control signal sent from the control device,

and sending a selected auditory output to the audio output device based on the control signal received from the control device.

- 5      30.    The apparatus according to claim 29 comprising an audio output selector switch communicating with the control device for selecting a type of auditory output to be sent from the playback device from a plurality of different types of auditory outputs stored in the playback device.
- 10    31.    The apparatus according to claim 30 wherein, for each user input, the plurality of different types of auditory outputs are selected from the group consisting of a pronunciation of a character corresponding to the user input, a pronunciation of a word beginning with a character corresponding to the user input, a sound associated with a word beginning with a character corresponding to the user input, and combinations thereof.
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32.    The apparatus according to claim 29 comprising a time delay switch communicating with the control device for selecting a value for a time delay between receiving the user input by the control device and sending the selected auditory output by the playback device.
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33.    The apparatus according to claim 29 comprising a record/playback switch communicating with the control device for selectively switching

the electronic circuitry between a playback mode enabling the electronic circuitry to produce the auditory output in response to activation of the switching devices by the user, and a record mode enabling auditory outputs to be received by the playback device and stored thereby.

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34. The apparatus according to claim 28 comprising an audio output selector switch communicating with the circuitry for selecting a type of auditory output to be produced by the circuitry from a plurality of different types of auditory outputs stored by the circuitry.

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35. The apparatus according to claim 28 comprising a time delay switch communicating with the circuitry for selecting a value for a time delay between receiving a user input by the circuitry resulting from activation of the switching devices, and emitting the audio output by the audio output device.

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36. The apparatus according to claim 28 comprising a record/playback switch communicating with the circuitry for selectively switching the circuitry between a playback mode enabling the circuitry to produce the auditory output in response to activation of the switching devices by the user, and a record mode enabling the circuitry to receive and store audio outputs.

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37. The apparatus according to claim 36 comprising an audio input connection communicating with the playback device for communicating with an audio input device.

5 38. A method for instructing a person in communicating in Braille, comprising:

- 10 (a) providing a plurality of tactile switching devices, each switching device actuatable between a raised position that can be sensed by a person as a raised Braille dot and a lowered position that can be sensed as the absence of a raised Braille dot; and
- (b) in response to a combination of switching devices actuated into respective raised positions, providing an auditory output for the person corresponding to the Braille character represented by the combination of switching devices actuated.

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39. The method according to claim 38 comprising arranging the tactile switching devices into a 3 X 2 Braille cell, wherein actuating the combination of switching devices into respective raised positions enables the person to learn to read Braille characters.

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40. The method according to claim 38 comprising arranging the tactile switching devices into a 1 X 6 row emulating a keyboard for a Braille writer, wherein actuating the combination of switching devices into

respective raised positions enables the person to learn to write Braille characters.

41. The method according to claim 38 comprising providing a pair of arms,  
5 each arm supporting at least three of the tactile switching devices, and  
rotating the arms between a first position at which the arms are  
generally in parallel relation and the switching devices are arranged in a  
3 X 2 array of Braille dots for emulating a Braille cell, and a second  
position at which the arms are pivoted outwardly from each other in a 1  
10 X 6 row of Braille dots for emulating a Braille writer.
42. The method according to claim 38 comprising, in response to actuation  
of the combination of switching devices, causing the tactile switching  
devices to transmit a user input signal to an electronic control device  
15 and, based on the user input signal received, causing the electronic  
control device to select the auditory output to be played back to the  
person indicative of the Braille character corresponding to the  
combination of switching devices actuated.
- 20 43. The method according to claim 42 wherein causing the electronic control  
device to select the auditory output to be played back comprises  
accessing a memory in which a plurality of different auditory outputs are  
stored.

44. The method according to claim 43 wherein the memory is disposed in a playback device and, after the selected auditory output has been accessed, the method comprises causing the playback device to send the selected auditory output to an audio output device for emission  
5 thereby.

45. The method according to claim 38 comprising selecting a type of audio output to be provided from a plurality of different types of audio outputs stored in circuitry communicating with the tactile switching devices.  
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46. The method according to claim 45 wherein, for the combination of actuated switching devices, the plurality of different types of audio outputs are selected from the group consisting of a pronunciation of the character corresponding to the combination of actuated switching devices, a pronunciation of a word beginning with a character  
15 corresponding to the combination of actuated switching devices, a sound associated with a word beginning with a character corresponding to the combination of actuated switching devices, and combinations thereof.

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47. The method according to claim 38 comprising selecting a length of a delay to transpire between the actuation of the combination of switching devices and the providing of the auditory output corresponding to the combination.

48. The method according to claim 38 comprising recording a plurality of auditory outputs into electronic circuitry communicating with the switching devices, wherein each auditory output corresponds to the Braille character represented by a specific actuatable combination of switching devices.
49. A method for instructing a person in communicating in Braille, comprising:
- (a) providing a pair of arms, each arm supporting at least three tactile switching devices, wherein the switching devices can be sensed by touch and selectively actuated for emulating patterns of raised Braille dots;
  - (b) rotating the pair of arms between a first position at which the arms are generally in parallel relation and the switching devices are arranged in a 3 X 2 array of Braille dots for emulating a Braille cell, and a second position at which the arms are pivoted outwardly from each other in a 1 X 6 row of Braille dots for emulating a Braille writer; and
  - (c) in response to a combination of switching devices actuated, providing an auditory output for the person corresponding to the Braille character represented by the combination of switching devices actuated.

50. The method according to claim 49 comprising, in response to actuation of the combination of switching devices, causing the tactile switching devices to transmit a user input signal to an electronic control device and, based on the user input signal received, causing the electronic control device to select the auditory output to be played back to the person indicative of the Braille character corresponding to the combination of switching devices actuated.
51. The method according to claim 50 wherein causing the electronic control device to select the auditory output to be played back comprises accessing a memory in which a plurality of different auditory outputs are stored.
52. The method according to claim 51 wherein the memory is disposed in a playback device and, after the selected auditory output has been accessed, the method comprises causing the playback device to send the selected auditory output to an audio output device for emission thereby.
53. The method according to claim 49, comprising selecting a type of audio output to be provided from a plurality of different types of audio outputs stored in circuitry communicating with the tactile switching devices.



54. The method according to claim 53 wherein, for the combination of actuated switching devices, the plurality of different types of audio outputs are selected from the group consisting of a pronunciation of the character corresponding to the combination of actuated switching devices, a pronunciation of a word beginning with a character corresponding to the combination of actuated switching devices, a sound associated with a word beginning with a character corresponding to the combination of actuated switching devices, and combinations thereof.

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55. The method according to claim 49 comprising selecting a length of a delay to transpire between the actuation of the combination of switching devices and the providing of the auditory output corresponding to the combination.

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56. The method according to claim 49 comprising recording a plurality of auditory outputs into electronic circuitry communicating with the tactile switching devices, wherein each auditory output corresponds to a Braille character represented by a specific actuatable combination of switching devices.

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